



PROFICIENCY TESTING SERVICE
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PARTICIPANT STATISTICS

IMMUNOHEMATOLOGY

FIRST QUADRIMESTER 2011

ABO Group

Method	Specimen 1				Specimen 2				Specimen 3				Specimen 4		Specimen 5		
	A	B	AB	O	A	A1	A2	WR	A	A1	A2	A1B	WR	A	O	A1B	B
Biotest Tube				16	14		2		14		2				16	1	15
Gamma Tube				30	28			1	29						30		30
Immucor Slide				2	2				2						2		2
Immucor Tube				103	95		3	5	94		3		6	101			103
Ortho Gel				104	68	2	2	15	67	2	2	1	16	104			104
Ortho Tube				59	55			2	55				2	59			59
Other Tube				7	7				7					7			7
Total Population				330	277	2	7	24	276	2	7	1	25	328		1	329
Flagging	***	***	***			***				***		***		***		***	

Due to no result code for would refer ABO discrepancies, those reporting type O will not be evaluated for Specimen 2 and 3 this event.

D (Rho) Typing

Method	Specimen 1			Specimen 2			Specimen 3			Specimen 4			Specimen 5		
	POS	Neg, weak D (Du) not performed	NEG	POS	Neg, weak D (Du) not performed	NEG	POS	Neg, weak D (Du) not performed	NEG	POS	Neg, weak D (Du) not performed	NEG	POS	Neg, weak D (Du) not performed	NEG
Biotest Tube	15			15			15			15			15		
Gamma Slide	8			8			7		1	8			8		
Gamma Tube	36	1		36	1		35	1	1	36	1		36	1	
Immucor Slide	17			16		1	16		1	17			15		2
Immucor Tube	108	1		108	1		108	1		106	1	1	108	1	
Ortho Gel	103		1	102			102			104			104		
Ortho Slide	50		2	50		2	50		2	52			46	2	4
Ortho Tube	64			64			64			64			63		
Other Slide	7			6		1	6		1	7			5	1	1
Other Tube	11			11			11			11			11		
Total Population	435	2	4	430	3	6	429	2	8	437	2	1	425	6	10
Flagging		***	***		***	***		***	***		***	***		***	***

Unexpected Antibody Detection

Method	Specimen 1		Specimen 2		Specimen 3		Specimen 4		Specimen 5	
	Not Detected	Detected	Not Detected	Detected	Not Detected	Detected	Not Detected	Detected	Not Detected	Detected
Biotest Tube	1	9		10	10		10		10	
Gamma Tube	7	13	1	19	16	4	20		19	
Immucor Tube	8	77		85	81	3	84		83	1
Ortho Gel		148	1	147	147	1	147		148	
Ortho Tube	7	27	2	32	31	3	33	1	33	1
Other Tube	1	5		6	6		6		6	
Total Population	25	285	4	306	298	11	306	2	306	2
Flagging	***		***			***		***		***

Antibody Identification, First

Method	Specimen 1		Specimen 2		Specimen 3		Specimen 4		Specimen 5		
	Would refer	M	E	Would refer	E	Would refer	D	Would refer	D	Would refer	D
Biotest Tube		7			1						
Immucor Tube	4	3			11						
Ortho Gel	1		1	1	17						
Ortho Tube	1	16			4						
Total Population	9	28	4	4	34	1		1		1	
Flagging			***			***	***	***	***	***	***

Antibody Identification, Second

Method	Specimen 1		Specimen 2		Specimen 3		Specimen 4		Specimen 5	
			Lu-a	Would refer			Would refer	D		
Ortho Gel				1						
Total Population				1	1					
Flagging										

Compatibility Testing

Name	Specimen 1				Specimen 2			Specimen 3			Specimen 4			Specimen 5				
	Compatible	Not Compatible	Would refer	Immediate spin only, compatible	Compatible	Not Compatible	Would refer	Immediate spin only, compatible	Compatible	Not Compatible	Immediate spin only, compatible	Compatible	Not Compatible	Would refer	Immediate spin only, compatible	Compatible	Not Compatible	Immediate spin only, compatible
Gamma Tube	1	14	2	3	15		3	2	12	4	4	15	1		4	15		4
Immucor Tube	8	35	10	4	41		12	4	43	1	13	44		1	12	44	1	12
Ortho Gel	1	117	6	2	106	8	10	3	108	9	8	109	9		8	112	5	8
Ortho Tube	3	25	3	4	27	1	3	5	28	1	7	26	2		8	26	2	8
Other Tube		6	2	1	5	1	2	1	7		2	7		2	7			2
Total Population	13	202	23	15	199	10	30	16	201	15	37	204	12	1	37	207	8	37
Flagging	***					***				***			***				***	

First Quadrimester 2011**Specimens 2 and 3 (ABO Group)**

Samples 2 and 3 were examples of **subgroups of A**. This was evident on the forward typing of the red blood cells (RBC), where a mixed-field reaction with anti-A antisera should have been detected. The reverse typing using the serum samples gave the expected group A reactions (negative with A1 reagent cells and positive with B reagent cells). Weak subgroups of A, in particular, are not that uncommon and should be suspected whenever RBCs give weaker or mixed-field reactions with anti-A antisera. It is important, therefore, to recognize mixed-field agglutination.

Mixed-field agglutination is defined as the presence of large or small agglutinates with unagglutinated cells. If using a tube test, the suspension should be examined for mixed-field agglutination whenever the reaction strength is less than expected or some of the cells are not agglutinated. When the RBCs of Samples 2 and 3 were tested in a tube test with anti-A, the reaction strength was approximately 2+ and there were smaller agglutinates and unagglutinated cells in the tube. When the same RBCs were tested using the gel method, there were some agglutinated cells forming a red band on the surface of the gel (the typical "positive" reaction), however there were also a number of agglutinates dispersed throughout the gel column (the "cloudiness" some labs reported observing). Keep in mind that with the gel test, a negative reaction is a compact button of cells at the bottom of the gel column. A positive reaction is defined by the manufacturer as agglutinated RBCs forming either a clear line on the surface of the gel column or RBC agglutinates dispersed within the gel column. With mixed-field agglutination, agglutinated cells form a band at the top of the gel or are dispersed throughout the gel; non-agglutinated cells will form a compact button at the bottom of the gel column. In other words, regardless of the test method used, the presence of RBC agglutinates indicates that at least some of the RBCs are expressing the corresponding antigen and the reaction should not be interpreted as "negative". In addition, any time the forward and reverse typings on a sample do not agree, results should be carefully interpreted and an ABO discrepancy should be suspected. Laboratories reporting group O as the ABO for Samples 2 and 3 would be incorrect; both samples showed typical reverse typing reactions for group A.

Mixed-field agglutination should always be interpreted with caution. The presence of fibrin or clots in the sample may result in clumping of cells in the tube test or layering of some RBCs within the gel column. Mixed cell populations may result from massive transfusion of another blood group such as a group A patient receiving a large number of group O RBCs. Bone marrow transplant patients may have both some of their original type of cells and the type of the bone marrow transplant. More commonly, such reactions may indicate an ABO subgroup, particularly if the reaction is observed with anti-A antisera. Every laboratory should have a protocol for addressing ABO discrepancies.

The principal subgroups of A are A₁ and A₂. Approximately 80% of group A individuals are A₁. These individuals have more A-antigen on their RBCs than individuals of other A subgroups and their RBCs will agglutinate when tested with A₁ lectin. Red cells from individuals with any subgroup of A other than A₁, by definition, do not react with A₁ lectin. (Note that neither Sample 2 nor 3 reacted when tested with A₁ lectin.) Individuals with subgroup A₂ often give weaker reactions with anti-A and not uncommonly have anti-A₁ present in their serum (this is often how they are detected). Subgroups weaker than A₂ are rare. RBCs of **subgroup A₃** typically give a mixed-field reaction with anti-A and anti-A,B (if used). The reaction strength is rarely greater than 1+–2+ with anti-A and the presence of many small agglutinates in a sea of unagglutinated cells is typical. The reaction strength with anti-A,B is much less. About 1 in 1000 group A individuals are subgroup A₃. A small number of A₃ individuals may have anti-A₁ in their serum.